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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,719	09/22/2003	Mark R. Kinkelaar	024948-00049	4654

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EXAMINER

YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
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1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/665,719

Applicant(s)

KINKELAAR ET AL.

Examiner

Dah-Wei D. Yuan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-216 is/are pending in the application.
- 4a) Of the above claim(s) 186-201 and 216 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-185 is/are rejected.
- 7) ☒ Claim(s) 202-215 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date
:09222003,12302003,01072004,07082004,11042004,12022004,

ORIENTATION INDEPENDENT LIQUID FUEL RESERVOIR

Examiner: Yuan

S.N. 10/665,719

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December 19, 2006

Election/Restrictions

1. Applicant's election without traverse of Group I-1, claims 1-185, 202-215, in Paper filed October 26, 2006 is acknowledged. Claims 186-201, 216 are withdrawn from consideration.

Claim Objections

2. Claim 212 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claim 212 does not include all of the limitations of the dependent claim 15.

Appropriate corrections are required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 15-19, 29-41, 45-47, 53-56, 59-66, 70-75, 79-89, 93-119, 121-125, 130, 132-138, 140-144, 146, 148-152, 154-158, 160-164, 166, 168-172, 174-185 are rejected under 35 U.S.C. 103(a) as being Hockaday (US 6,326,097 B1) in view of Olsen et al. (US 6,460,985 B1) and Bryant et al. (US 5,738,657).

With respect to claims 1,40,65,75,79-82,88,95-111,121-125,130,135,413,151,163,171, 178-180, Hockaday teaches a device powered by a fuel cell comprising a fuel tank (70) (fuel container) that is connected to the anode of the fuel cell array (68) by a fuel tube (71). The fuel tube is connected to an outlet, which has no wicking structure, in the fuel tank that provides fluid communication between the fuel tank and the fuel cell array. See Column 11, Line 47 to Column 12, Line 52; Figure 12. However, Hockaday does not specifically disclose the wicking structure within the container. Olsen et al. teach a container for providing fluid comprising a wicking structure. The container (12) includes a reservoir (34) having a fluid outlet (36) (first port) and an air inlet (38). Disposed within the reservoir is a network of fibers that defines a capillary storage member (40) (wicking structure). The capillary is sufficient to retain fluid within the container for all orientations of the reservoir as well as undergoing shock and vibration during handling. The position of the capillary member with respect to the dimension of the container is shown in Figures 7 and 8. See Column 3, Lines 34-49. Therefore, it would have been obvious to one of ordinary skill in the art to use the wicking structure of Olsen et al. onto the fuel reservoir of Hockaday, because Olsen et al. teach the wicking structure can retain fluid within the container for all orientations of the reservoir and during handling.

Moreover, Hockaday and Olsen do not teach that the liquid fuel reservoir further comprises a pressurized pallet or bladder. Bryant et al. teach a container system wherein a pressurized bladder can exert a continuing pressure on the solution such that the solution is forced to flow at a constant rate through the restrictor (fluid outlet). See Column 4, Lines 28-42, Column 6, Lines 11-47. Therefore, it would have been obvious to one of ordinary skill in the art

to include the pressurized bladder onto the liquid fuel reservoir of Hockaday and Olsen, because Bryant et al. teach the use of the expandable bladder to exert pressure on the solution in the container and ensure the continual flow of the fluid.

With respect to claims 2-7,59,71-73,114-119,181-185, the disclosure of Hockaday and Olsen differs from Applicant's claims in that Hockaday and Olsen do not specifically disclose the wicking structure volume in the container. However, Olsen et al. recognize the relative dimensions of the wicking structure can be modified depending on the desirable capacity of the container. See Column 4, Lines 48-67. Therefore, it would have been within the skill of the ordinary artisan to adjust the volume of the wicking structure in the container depending on capacity requirement of the fuel reservoir. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art. In re Boesch*, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claim 15, Olsen discloses that the print head (24) can act as a one-way valve that only allow liquid to flow out of the container.

With respect to claims 16-19,53-56, Olsen teaches the wicking structure contacts at least one portion of an inner surface of the side wall and proximal wall of the container. See Figure 8.

With respect to claim 29, it is noted the claim is a product-by-process claim. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made

by a different process.” In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Since Olsen’s actual fuel reservoir is similar to that of the Applicant’s, Applicant’s process is not given patentable weight in this claim.

With respect to claims 30-39,60-64,74,83-87,94,134,142,150,162,170,174-177, Olsen et al. teach the capillary member is preferably a bi-component fiber having polypropylene core and a polyethylene terephthalate sheath. Also, surface-treated polyurethane foam can be used as the capillary membrane material. See Column 6, Lines 44-67; Column 7, Lines 17-33. Olsen et al. do not specifically disclose the density, pore size, compression ratio and fuel delivery efficiency of the polyurethane foam in the wicking structure. However, it is the position of the examiner that such properties are inherent, given that both Olsen et al. and the present application utilize similar polyurethane foam material. A reference which is silent about a claimed invention’s features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999)

With respect to claims 41,66,89,136,144,152,164,172, Hockaday teaches the use of pump to delivery liquid. See Abstract.

With respect to claims 45,70,93, the air outlet in Olsen is considered as a two-way valve.

With respect to claims 46,47,112,113,132,133,140,141,148,149,160,161,168,169, Olsen et al. do not specifically disclose the free rise wick height of the wicking structure with respect to the dimension of the fuel container. However, it is the position of the examiner that such properties are inherent, given that both Olsen et al. and the present application utilize similar wicking structure (capillary member). A reference which is silent about a claimed

invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to claims 138,146,154-158,166,181-185, it is the position of the examiner that disclosure provides no evidence of criticality and patentable distinction with regard to the shape of the wicking structure. Also, it is well known in the art that location of the wicking structure within the container can be varied depending on the amount of the capillary member in the container. Therefore, it would have been within the skill of the ordinary artisan to adjust the location of wicking structure in the container depending on the design requirement of the fuel container. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art*. In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

5. Claims 8-14,20-28,48-52,57,58,76-78,120,131,139,147,159,167 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hockaday (US 6,326,097 B1) in view of Olsen et al. (US 6,460,985 B1) and Bryant et al. (US 5,738,657) as applied to claims 1-7,15-19,29-41,45-47,53-56,59-66,70-75,79-89,93-119,121-125,130,132-138,140-144,146,148-152,154-158,160-164,166,168-172,174-185 above, and further in view of Childs et al. (US 6,652,080 B2).

Hockaday and Olsen et al. disclose a liquid fuel reservoir for a fuel cell system as described above in Paragraph 4. However, Hockaday and Olsen do not disclose the reservoir further comprises a retainer to hold the wicking structure. Childs teach a fluid delivery system wherein the capillary chamber comprises capillary material and a filter (66) (retainer). The filter is used to separate the capillary material from an outlet, which transitions into fluid channels.

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The filter can be fabricated from a fine mesh screen. See Column 3, Lines 6-16; Figure 1.

Therefore, it would have been obvious to one of ordinary skill in the art to add a filter onto the fuel reservoir of Hockaday and Olsen, because Childs et al. teach the use of a filter to retain the wicking material.

With respect to claim 28, the filter is considered as a clamp that it used to keep the capillary material (62) between the opposing walls of the capillary chamber (60).

6. Claims 42,67,90,137,145,153,165,173 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hockaday (US 6,326,097 B1) in view of Olsen et al. (US 6,460,985 B1) and Bryant et al. (US 5,738,657) as applied to claims 1-7,15-19,29-41,45-47,53-56,59-66,70-75,79-89,93-119,121-125,130,132-138,140-144,146,148-152,154-158,160-164,166,168-172,174-185 above, and further in view of Sharples (US 4,955,512).

Hockaday and Olsen et al. disclose a liquid fuel reservoir for a fuel cell system as described above in Paragraph 4. However, Hockaday and Olsen do not disclose the reservoir further comprises an one-way valve. Sharples teaches a liquid containers wherein a pressure control valve (one-way valve) is use to permit ingress of external ambient air to the internal space when there is s pressure differential in the container. See Column 4, Line 63 to Column 5 Lines 19. Therefore, it would have been obvious to one of ordinary skill in the art to add an one-way valve to the liquid fuel reservoir of Hockaday and Olsen, because Sharples teaches the use of an one-way valve to eliminate negative pressure inside the container.

7. Claim 43,44,68,69,91,92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hockaday (US 6,326,097 B1) in view of Olsen et al. (US 6,460,985 B1) and Bryant et al. (US 5,738,657) as applied to claims 1-7,15-19,29-41,45-47,53-56,59-66,70-75,79-89,93-119,121-125,130,132-138,140-144,146,148-152,154-158,160-164,166,168-172,174-185 above.

Hockaday and Olsen et al. disclose a liquid fuel reservoir for a fuel cell system as described above in Paragraph 4. However, Hockaday and Olsen do not disclose the reservoir further comprises a sealable, detachable cap. However, it would have been obvious to one of ordinary skill in the art to add a rubber stopper as a cap to the air inlet (38) of Hockaday, because one of ordinary skill in the art would recognize that needle can penetrate through rubber stopper without permanently puncturing the rubber.

8. Claims 126-129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hockaday (US 6,326,097 B1) in view of Olsen et al. (US 6,460,985 B1) and Bryant et al. (US 5,738,657) as applied to claims 1-7,15-19,29-41,45-47,53-56,59-66,70-75,79-89,93-119,121-125,130,132-138,140-144,146,148-152,154-158,160-164,166,168-172,174-185 above, and further in view of Higuchi (US 6,662,964 B2).

Hockaday and Olsen et al. disclose a liquid fuel reservoir for a fuel cell system as described above in Paragraph 4. However, Hockaday and Olsen do not disclose the reservoir is collapsible. Higuchi teaches a liquid containers made of collapsible synthetic resin in order to substantially reduce the volume the container body after the discharge of the liquid. See Example 2. Therefore, it would have been obvious to one of ordinary skill in the art to use a

collapsible material for the container of Hockaday and Olsen, because Higuchi teaches the use of a collapsible container to reduce the volume of the container body after the discharge of the liquid.

Allowable Subject Matter

9. Claims 202-211,213-215 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 202-211,213-215 would be allowable because the prior art does not disclose or suggest the pressurized pallet or bladder is connected to the second port, which port allows a fluid to be introduced into the pressurized pallet or bladder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
December 19, 2006



DAH-WEI YUAN
PRIMARY EXAMINER